

## Curriculum Vitae

- Name:** Prof. Mohammed Abdel-samie Abdel-halim
- Position:** Professor at Electrical Engineering Dept., College of Engineering, Al-Qassim University
- Nationality:** Egyptian
- Date of Birth:** 3/10/1951
- Sex:** Male
- Marital Status:** Married
- Address:** Electrical Power and Machines Department,  
Faculty of Engineering,  
Cairo University,  
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- Qualifications:**
1. Ph.D., Electrical and Electronic Engineering Dept., Loughborough University of Technology, England, 1986.  
***Title of the Thesis:***  
**“New Approach to Steady State and Dynamic Nonlinear Modeling of Laminated Salient-Pole Alternator Systems”.**
  2. M.Sc., Electrical Power and Machines Dept., Faculty of Engineering, Cairo University, 1979.  
***Title of the Thesis:***  
“Performance of DC Servo-Motor Fed from a Half-Wave Thyristor Controlled Rectifier Circuit”.
  3. B.Sc., Electrical Power and Machines Dept., Faculty of Engineering, Cairo University, 1974. Rate of Appreciation: ‘Very Good with Honour Degree’. Grade of B.Sc. Project: ‘Distinction’.
  4. A training course in teaching techniques for a university staff, Cairo University, 1976.
- Special Interest:** Electrical Machines, Drive Systems, Power Electronics and Power Systems.

**Industry and Engineering Experience**

- Participation in preparing the “Engineering and Technology Dictionary”, produced by Federation of the Arab Engineers, published by Alahram Institution, Egypt, 1978.
- Long term investment planning of the Egyptian Electric Power System, project directed by Cairo University in conjunction with Massachusetts Institute of Technology for the benefit of Ministry of Electricity, Egypt, 1979 – 1982.
- Redesign, installation and testing of a two-speed 3-phase induction motor and its control switch gears for bolt industry, private bolt factory, Egypt, 1987.
- Participation in building some experiments in the field of electrical energy and circuits for the BSc degree students of Electrical Power and Machines Dept., Faculty of Eng., Cairo Univ., 1987.
- Testing, evaluation and selection of fractional h.p single-phase induction motors for use in washing machines manufactured by Ideal Company, Egypt, 1987 - 1988.
- Participation in preparing Egyptian Standard Specifications in the field of the electrical equipment, domestic appliances and measuring instruments, Egypt, 1988 - 1990.
- Testing for commissioning and determining the performance of rectifier converters belonging to Sketron Company, Egypt, 1988.
- Developing and applying techniques for energy saving in the Egyptian Industry, Energy Planning Association, Egypt, 1988 - 1990.
- Testing and fixing electronic cards used in the excitation systems of alternators of East Cairo Gas Power Station, Egypt, 1989-1990.
- Improving the performance of electric drives in various industries and utilities, Energy Planning Association, Egypt, 1988 - 1990.
- Engineering consultation regarding the determination of causes of the explosion of some potential transformers in the standby power station of Jordan University of Science and Technology, Irbid, Jordan, 1991.
- Engineering consultation for developing the performance of the private power station of Jordan University of Science and Technology, Jordan, 1991 - 1992.
- Engineering consultation regarding the conversion of the feeding of some important loads of Jordan University of Science and Technology to double-feeding, Irbid, Jordan, 1991.
- Participation in the engineering technical committees of the constructional works of Faculty of Medicine, Jordan University of science and Technology, Irbid, Jordan, 1991 -1992.
- Electronic control of single-phase induction motors; theoretical and experimental project sponsored by the research Center, College of Engineering, King Saud University, 1994 -1999.
- Revision of the Saudi-standard Specifications, Saudi Arabia, 1993 - 2000.
- Preparing the Saudi Standard Specifications for the domestic appliances, 1998 - 2000.
- Evaluation and testing several single-phase fractional horse-power motors belonging to Al-rahman Company, Egypt, 2001 - 2003.
- Evaluation, testing and supervising the repair works for lifts of some buildings in Faculty of Law, Cairo University, 2003.

- Commissioning and testing a new lift in Faculty of Law, Cairo University, 2003.
- Member of the committee of the Egyptian Ministry of Electricity and Energy for the revision IEC standard specification, Egypt, 2003-2005.

### **Training Courses for Engineers and Technicians**

- i) Power Transformers, King Saud University, May 23-27, 1998, Energy Research Centre, Cairo Univ., 2001 – 2003.
- ii) Modern Technologies of Management and Improving of Power Factor, Saudi Engineers Society, Saudi Arabia, June 12-16, 1990, Energy Research Centre, Cairo Univ., Egypt, April, 2003, Dec. 2003.
- iii) Evaluation and Enhancement of Power Quality, Energy Research Centre, Cairo University, 2003 - 2004.
- iv) Electrical Safety, Riyadh, GTC, Saudi Arabia, July 2003.
- v) Electrical Network Protection, Saudi Engineers Society, Riyadh, Saudi Arabia, Dec. 2003.
- vi) Electrical Machines and Transformers Grounding, GTC, Saudi Arabia, Dec. 2003.
- vii) Power Quality and Harmonics, GTC, Riyadh and Zahran, Saudi Arabia, 2003-2004.
- viii) Load Management and Energy Conservation, Energy Research Centre, Cairo University, Jan., 2004.
- ix) Semiconductor Equipment in Power Systems, prepared for the Energy Research Centre, Cairo University.
- x) Electrical Power Distribution Systems Troubleshooting, Engineering Experience Office, Cairo, Egypt, 2004.
- xi) Power Cables- Selection, Testing, Fault Locating and Jointing, Energy Research Centre, Cairo University, December, 2004.
- xii) Energy-Efficient Motors, Prepared for Engineering Experience Office, Cairo, Egypt, 2004
- xiii) Electrical Connections and Cabling Systems, KPC, Kuwait, July, 2005.
- xiv) Cable Jointing& Practice, Abu Dhabi Liquefaction Company (ADGAS), August, 2006

### **Engineering Research Experience**

- Performance of d.c servo-motors fed from controlled rectifier circuits, M.Sc. research, 1976- 1979.
- Long term investment planning of the Egyptian Electric Power System, project directed by Cairo University in conjunction with Massachusetts Institute of Technology for the benefit of Ministry of Electricity, Egypt, 1979– 1982.
- Nonlinear modelling of laminated salient pole alternator systems, Ph.D. research, 1982 – 1986.
- Dynamic and transient stability studies of single-field and dual-field synchronous generators.
- Modelling of alternator excitation systems comprising exciters and automatic voltage regulators.
- Optimizing the performance of wind driven induction generator systems, project sponsored by the Scientific Research Center, Jordan University of Science and Technology, 1991– 1993.
- Electronic control of single-phase induction motors, theoretical and experimental project sponsored by the Research Center, College of Engineering, King Saud University, 1994– 1999.

- Solid-state controlled wind-driven induction generators, project sponsored by the Scientific Research Deanery, Al-Qassim University, 2006-till now.

## Teaching Experience

### 1. Positions

- Editor in Chief of Alqassim Scientific Journal, Engineering and computer Sciences, 2006 – till now.
- Professor at Electrical Engineering Dept., College of Engineering, Al-Qassim University, 2005 – till now.
- Professor at Electrical Power and Machines Dept., Cairo University, Egypt, June 2000 - 2005.
- Professor at Electrical Engineering Dept., King Saud University, Saudi Arabia, Jan. 1999 – June 2000.
- Associate Professor at Electrical Engineering Dept, King Saud University, Saudi Arabia, 1993 – Jan. 1999.
- Assistant Professor at Electrical Engineering Dept., Jordan University of Science and Technology, Jordan, 1990 – 1993.
- Lecturer at Electrical Power and Machines Dept., Cairo University, Egypt, 1986 – 1990.
- Research student, Loughborough University of Technology, Loughborough, England, 1982- 1986.
- Assistant Lecturer at Electrical Power and Machines Dept., Cairo University, Egypt, 1979- 1982.
- Demonstrator at Electrical Power and Machines Dept., Cairo University, Egypt, 1974 – 1979.

### 2. Taught Courses

#### - *Undergraduate:*

Theory of electrical machines, analysis and design of electrical machines, electric drives, testing of electrical machines, power electronics, electronic control of electrical machines, electromagnetic fields, power system analysis, electric energy utilization, electric circuits, electrical engineering and fortran language.

#### - *Postgraduate:*

Electrical drives, advanced electrical machines, generalized theory of electrical machines, special topics in electrical machines, electric machine dynamics, unbalanced operation of electrical machines, advanced topics in machine design, power semiconductor controlled drives, advanced power electronics, analysis and design of thyristorized circuits, unbalanced operation of machines, specifications and testing of relays and magnetic contactors, electromagnetics.

### 3. Supervision of Postgraduate Thesis

- Modeling and Analysis of Thyristor Divert Automatic Voltage Regulator, M.Sc., Cairo University, Cairo, 1989-90.
- A new Method Using Two Triacs for Control of Single-Phase Induction Motor, M.Sc., JUST, Irbid, Jordan, 1990-93.

- Analysis of Dynamic and Transient Performance of Autonomous Alternators, M.Sc., JUST, Irbid, Jordan, 1992-93
- Optimal Operation of Wind-Driven Asynchronous Generators, M.Sc., JUST, Irbid, Jordan, 1992-93.
- Digital Power Meter Design, M.Sc., JUST, Irbid, Jordan, 1992-93.
- Analysis of Transient Phenomena Associated with Saturated Three-Phase Induction Motors, M.Sc., KSU, Riyadh, Saudi Arabia, 1996-99.
- Optimum Performance of Grid-Connected Induction Generators, Ph.D., KSU, Riyadh, Saudi Arabia, 1999- 2000.
- Modeling and Analysis of a Grid Connected Induction Generator Using AC Voltage Controller, M.Sc., 2002- 2006.

### **Evaluation of Research Projects and Papers**

- Evaluation of 4 papers (No. B001, B013, B025 and B040) submitted to the Fifth Saudi Engineering Conference, Umm Al-Qura Univ., 1998.
- Evaluation of the project No.: 13-19-ات submitted to King Abdulaziz City for Science and Technology (KAST), Saudi Arabia, 1998.
- Evaluation of the paper entitled: "Modelling of an Induction Motor Fed from a Voltaic cells", submitted to Ain Shams Scientific Bulletin, Faculty of Engineering, Ain Shams University, 2003.
- Evaluation of the paper entitled: "Transistorized ac chopper for voltage regulation of a stand alone self excited induction generator", submitted to MEPCON'2005.
- Evaluation of the paper entitled: "Performance of dynamic voltage restorer for voltage sag mitigation", submitted to MEPCON'2005.

### **Evaluation of Post-Graduate Theses**

- Evaluation of M.Sc thesis entitled "A new method using two triacs for control of single-phase induction motors", Electrical Eng. Dept., Faculty of Eng., Jordan Univ. of Science and Technology, Jordan, 1992.
- Evaluation of M.Sc thesis entitled " Microprocessor based stepped sine wave inverter", Electrical Eng. Dept., College of Eng., King Saud Univ., Sudi Arabia, 1414 H.
- Evaluation of M.Sc thesis entitled "Unconventional methods for starting of wound rotor 3-phase induction motors", Electrical Eng. Dept., College of Eng., King Saud Univ., Sudi Arabia, 1417 H.
- Evaluation of M.Sc thesis entitled "Analysis of transient phenomena associated with saturated 3-phase induction motors", Electrical Eng. Dept., College of Eng., King Saud Univ., Sudi Arabia, 1420 H.
- Evaluation of M.Sc thesis entitled "Modelling an SF6 gas insulated and cooled power transformer", Faculty of Engineering, Cairo Univ., March 2003.
- Evaluation of M.Sc. thesis entitled "A neural network sensorless controlled induction motor drive", Faculty of Engineering, Cairo Univ., April 2003.
- Evaluation of a Ph.D thesis entitled "Sensorless control of a brushless d.c motor", Faculty of Engineering, Cairo University, Sept. 2004.

- Evaluation of M.Sc. thesis entitled "The design and analysis of induction motor with sleeve rotor", Faculty of Engineering, Al-Azhar University, November 2004.

## Publications

- The applicant has 47 published papers: 26 papers published in **international journals**, 8 papers published in **international conferences**, and 13 papers published in the Egyptian-and-Saudi Universities journals. The details are as follows:
  - 7 papers published in the *IEEE Transactions*,
  - 5 papers published in the *IEE proceedings*.
  - 8 papers published in Electrical Machines and Power systems Journal,
  - 3 papers published in Electrical Power Components and Systems Journal,
  - 2 papers published in European Transaction on Electrical Power Engineering (ETEP),
  - 1 paper published in the Transactions on Systems, Signals and Devices
  - 8 papers published in international conferences,
  - 6 papers published in the scientific Engineering Bulletin, Faculty of Engineering Cairo University, Egypt.
  - 2 papers published in King Saud University Journal, Engineering Sciences (2), King Saud University, Saudi Arabia.
  - 2 papers published in Ain Shams Scientific Bulletin, Faculty of Engineering, Ain Shams University, Egypt.
  - 1 paper published in Mansoura Engineering Journal (MEJ), Faculty of Engineering, Mansoura University, Egypt.
  - 1 paper published in Port-said Engineering Research Journal, Faculty of Engineering, Port-Said University, Egypt.
  - 1 paper published in Al-Qassim Scientific Journal- Engineering and computer Sciences, College of Engineering, Al-Qassim University, Saudi Arabia.
- *The main subjects of the papers are:*
  - i) Performance of alternator systems.
  - ii) Control of 3-phase induction motors.
  - iii) Control of single-phase induction motors.
  - iv) Solid state control of drives.
  - v) Performance of induction generators.
  - vi) Solid state control of induction generators.
  - vii) Power factor correction of the power system.
  - viii) Performance of the solid-state converters.

## List of Publications

### *i- Published Papers*

- 1- M. A. Abdel-halim, et. al., "Armature controlled d.c motor fed from h.w rectifier circuits", Scientific Engineering Bulletin, Faculty of Engineering, Cairo University, Vol. 1979/4, 1979, pp. 65-83.
- 2- M. A. Abdel-halim, et. al., "Computing the ripple content in the armature current of thyristor controlled d.c servo-motor", Scientific Engineering Bulletin, Faculty of Engineering, Cairo Univ., Vol. 1980/1, 1980, pp. 221-231.
- 3- M. A. Abdel-halim, et. al., "Critical review of load forecasting methodologies and application of Scott Program", Proc. Of the 16<sup>th</sup> Annual Conference in Statistics, Computer Science, Operation Research & Mathematics, Vol. 1, Cairo, Egypt, Dec. 1981.

- 4- M. A. Abdel-halim, et. al., "New approach for the application of shunt capacitors to the primary distribution feeders", IEEE Trans., Vol. PAS-102, 1983, pp. 10-13.
- 5- M. A. Abdel-halim, et. al., "Modelling saturation of laminated salient-pole synchronous machines", IEE Proc., Vol. 134, Pt. B. No. 4, July 1987, pp. 215-223.
- 6- M. A. Abdel-halim, et. Al., "Dynamic stability analysis of saturated salient-pole alternator", Proc. of the International Conference on Electrical Machines, Pisa, Italy, 12-14 Sept. 1988, pp. 531-536.
- 7- M. A. Abdel-halim, et. al., "A new dynamic inductance concept and its application to synchronous machine modelling", IEE Proc., Vol. 135, Pt. B, No. 6, Nov. 1988, pp. 231-239.
- 8- M. A. Abdel-halim, et. al., "Dynamic response of a.c brushless exciter in the subsynchronous frequency range", Proc. of the Middle East Power System Conference MEPCON-89, 9-13 Jan. 1989, Egypt, pp. 603-607.
- 9- M. A. Abdel-halim, et. al., "Modelling of a new modified chopper", Scientific Engineering Bulletin, Faculty of Engineering, Cairo Univ., Vol. 37(1), 1990, pp. 223-235.
- 10- M. A. Abdel-halim, et. al., "Speed control of induction motor using a modified chopper in the rotor circuit", Scientific Engineering Bulletin, Faculty of Engineering, Cairo Univ., Vol. 37(2), 1990, pp. 535-550.
- 11- M. A. Abdel-halim, et. al., "Direct phase modelling of synchronous generators", IEE Proc., Vol. 137, Pt. B, No. 4, July 1990, pp. 239-247.
- 12- M. A. Abdel-halim, et. al., "Modelling a laminated brushless-alternator unit in all modes of operation", IEE Proc. Vol. 138, Pt. B, No. 2, March 1991, pp. 87-94.
- 13- M. A. Abdel-halim, "Performance characteristics of the thyristor divert automatic voltage regulator", ETEP Trans., Vol. 1, No. 3, May/June 1991, pp. 143-148.
- 14- M. A. Abdel-halim, "Analysis of the operation of a three phase bridge rectifier under fault conditions", Scientific Engineering Bulletin, Faculty of Engineering, Cairo University, Vol. 39, No. 1, 1992, pp. 163-177.
- 15- M. A. Abdel-halim, et. al., "Optimized solid-state exciter for wind powered pumping applications", Proc. of the Fourth Arab International Solar Energy Conference, Amman, Jordan, 20-25 Nov. 1993, pp. 233-241.
- 16- M. A. Abdel-halim, et. al., "A case study of a three-phase bridge semi-converter incorporating faulty elements and feeding resistive load", Scientific Engineering Bulletin, Faculty of Engineering, Cairo University, Vol. 41, No. 5, 1994, pp. 982-996.
- 17- M. A. Abdel-halim, et. al., "Damping and synchronizing torques of salient-pole generator with accurate representation of saturation", IEEE Trans. On Energy Conversion, Vol. 10, No. 1, 1995, pp. 1-9.
- 18- M. A. Abdel-halim, et. al., "Solid-state control of a wind driven self excited induction generator", Electric Machines and Power Systems Journal, Vol. 23, No. 5, 1995, pp. 571-582.
- 19- M. A. Abdel-halim, et. al., "A capacitor start three-phase induction motor", IEEE Trans. on Energy Conversion, Vol. 10, No. 4, 1995, pp. 675-680.
- 20- M. A. Abdel-halim, et. al., "Direct-phase modelling of an isolated brushless exciter-alternator unit including the magnetic nonlinearities", IEE Proc. Part. B, vol. 142, No. 3, May 1995, pp. 206-214.
- 21- M. A. Abdel-halim, "Solid-state controlled single-phase induction motor", Electric Machines and Power Systems Journal, Vol. 24, No. 6, 1996, pp. 623-638.

- 22- M. A. Abdel-halim, et. al., "A new method using two triacs for control of single-phase induction motor", *ETEP Trans.*, Vol. 6, No. 6, 1996, pp. 427-432.
- 23- M. A. Abdel-halim, et. al., "A nonconventional method for fast starting of three-phase wound-rotor induction motors", *IEEE Trans. on Energy Conversion*, Vol. 11, No. 4, 1996, pp 701-707.
- 24- M. A. Abdel-halim, "Transfer function model of a brushless exciter", *Journal of King Saud University*, Vol. 9, Engineering Science (2), 1997, pp. 221-238.
- 25- M. A. Abdel-halim, "Control of single phase induction motor using forced-commutated electronic switches", *Electric Machines and Power Systems Journal*, Vol. 25, No. 10, 1997, pp. 1119-1133.
- 26- M. A. Abdel-halim, et. al., "Smooth starting of slip ring induction motors", *IEEE Trans. on Energy Conversion*, Vol. 12, No. 4, 1997, pp. 317-322.
- 27- M. A. Abdel-halim, et. al., "Synchronizing and damping torques of saturated dual-excited alternators", *Electric machines and Power Systems Journal*, Vol. 26, No. 7, 1998, pp. 723-740.
- 28- M. A. Abdel-halim, "Control of single-phase induction motor using one-phase to two-phase solid-state converter", *Electric Machines and Power Systems Journal*, Vol. 27, No. 6, 1999, pp. 569-580.
- 29- M. A. Abdel-halim, "Control of single-phase induction motor using forced-commutated electronic switches and free-wheeling paths", *Electric Machines and Power Systems Journal*, Vol. 27, No. 11, 1999, pp. 1201-1214.
- 30- M. A. Abdel-halim, et. al., "Stability assessment of saturated salient pole alternator incorporating power system stabilizer", *Electric Machines and Power Systems Journal*, Vol. 27, No. 12, 1999, pp. 1313-1329.
- 31- M. A. Abdel-halim, et. al., "A comparative study on the starting methods of three phase wound rotor induction motors", *IEEE Trans. on Energy Conversion*, Vol. 14, No. 4, Dec. 1999, pp. 918-922.
- 32- M. A. Abdel-halim, et. al., "Operating characteristics of the shunt connected three phase induction motor", *Ain Shams Scientific Bulletin, Faculty of Engineering, Ain Shams University*, Vol. 35, No. 2, 2000, pp. 287-302.
- 33- M. A. Abdel-halim, et. al., "Performance characteristics of a novel chopper using PSPICE", *Mansoura Engineering Journal (MEJ), Faculty of Engineering, Mansoura University*, Vol. 25, No. 3, 2000, pp. E.52-E.61.
- 34- M. A. Abdel-halim, "Solid-state control of a grid connected induction generator", *Electric Power Components and Systems Journal*, Vol. 29, No. 2, 2001, pp. 163-178.
- 35- M. A. Abdel-halim, et. al., "Capability diagram of dual-field alternators including magnetic saturation", *Journal of King Saud University*, Vol. 13, Engineering Science (2), 2001.
- 36- M. A. Abdel-halim, et. al., "Torsional oscillation problems associated with shunt induction motor driving distributed inertias", *Electric Power Components and Systems Journal*, Vol. 29, No. 8, 2001, pp. 739 - 745.
- 37- M. A. Abdel-halim, et. al., "Control of grid-connected three phase induction generator using naturally commutated ac voltage controller", *Proc. of the Canadian Conference on Electrical and Computer Engineering (CCECE 2001)*, 13-16 May 2001, Toronto, Canada, Paper No. 66.
- 38- M. A. Abdel-halim, et. al., "Including effects of cross-saturation and leakage path saturation together in the generalized model of three-phase induction machine", *Proc. of the Canadian Conference on Electrical and Computer Engineering (CCECE 2001)*, 13-16 May 2001, Toronto, Canada, Paper No. 67.

- 39- M. A. Abdel-halim, et. al., "Including effects of cross-saturation and leakage path saturation together in the generalized model of induction generators", Proc. of the International AEGEAN Conference on Electrical Machines and Power Electronics, 27-29 June 2001, Kusadasi, Turkey, pp. 30-35.
- 40- M. A. Abdel-halim, et. al., "Electromechanical transient behaviour of a smooth-started induction motor", Accepted for publication, IEEE Trans.-EC.
- 41- M. A. Abdel-halim, et. al., "Comparative study of the electromechanical starting transients of a large cage induction motor using different starting methods", Ain Shams Scientific Bulletin, Faculty of Engineering, Ain Shams University, Vol. 38, No. 1, 2003, pp. 219-236.
- 42- M. A. Abdel-halim, et. al., " Analysis and operation of nonisolated three-phase induction generator controlled by symmetrical angle technique", Proc. of IEE International Conference on Computational Aspects and Their Applications in Electrical Engineering, Jordan, March 2004.
- 43- M. A. Abdel-halim, et. al., " Analysis and operation of nonisolated three-phase induction generator controlled by transistorized ac converter", Proc. of IEEE Aegean Conference on Electrical Machines and Power Electronics (ACEMP), Istanbul, Turkey, May, 2004.
- 44- M. A. Abdel-halim, et. al., "Performance of grid connected induction generator under naturally commutated ac voltage controller", Electric Power Components and Systems, Vol. 32(7), July, 2004.
- 45- M. A. Abdel-halim, et. al., "Performance of a grid connected induction generator using ac chopper", Accepted for publication in Port-Said Engineering Research Journal, Faculty of Engineering, Suez Canal University, Port-said, Egypt, 2005.
- 46- M. A. Abdel-halim, et. al., "Analysis and performance of 3-phase grid-connected induction generator via transistorized ac voltage controller", Transactions on Systems, Signals and Devices, Vol. 3, No. 2, 2007.
- 47- M. A. Abdel-halim, et. al., "ac chopper controlled grid-connected induction generator", Al-Qassim Scientific Journal- Engineering and Computer Sciences, Vol. 1, No. 1, 2007.

**ii- Papers Submitted for Publication**

- 1- M. A. Abdel-halim, et. al., "Control of single-phase induction motors using a.c chopper", Electric Power Components and Systems Journal.
- 2- M. A. Abdel-halim, et. al., "Effects of power system harmonics on the electrical and mechanical performance of saturated induction motors", IEEE Trans.-EC.
- 3- M. A. Abdel-halim, et. Al., "Performance of induction generators connected to the network via ac choppers", Electric Power Components and Systems Journal.

## References

- 1- Prof. F. I. Ahmad, ex-chairman of Cairo University, Electrical Engineering Dept., Faculty of Engineering, Cairo University, Giza, Egypt.
- 2- Prof. Mohammed A. Badr, ex-vice dean, Faculty of Engineering, Ain Shams University, Cairo, Egypt.
- 3- Prof. M. Mamdouh Abdel-aziz, head of Electrical Power and Machines Dept., Faculty of Engineering, Cairo University, Giza, Egypt.
- 4- Prof. Abdullah Alsha'lan, ex-head of Electrical Engineering Department, College of Engineering, King Saud Univ., Saudi Arabia.
- 5- Prof. Abdul-rahman I. Alolah, Electrical Engineering Dept., College of Engineering, King Saud Univ., Saudi Arabia.